Critical Rounds Newsletter

Vol 3 | Issue 34 | 2022

Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you **"Critical Rounds News letter "** which contain latest and interesting news in the field of Critical Care .

This issue contains :

1. A study on Practices in sedation, analgesia, mobilization, delirium, and sleep deprivation in adult intensive care units (SAMDS-ICU) before and during the COVID-19 pandemic
2. Influence of Early and deferred coronary angiography on risk of acute kidney injury in out-of-hospital cardiac arrest patients
3. A case report of Lazarus Phenomenon

free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Limited

Critical Rounds

Vol 3 | Issue 34 | 2022

1.A study on Practices in sedation, analgesia, mobilization, delirium, and sleep deprivation in adult intensive care units (SAMDS-ICU) before and during the COVID-19 pandemic

During an intensive care unit (ICU) stay, critically ill patients commonly report a high symptom burden. Pain is one of the most distressing symptoms, along with shortness of breath and confusion, reported by 38–51 % at risk of death. [1]Delirium is still common among critically ill patients. In the ICU, sedatives and analgesics (including opiates) are the most commonly administered medications. These drugs are also linked to an increased risk of delirium, hospital-acquired infections, and mortality. The 2018 Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU (PADIS) promotes the judicious use of sedatives, analgesics, and psychoactive medications.[2] The implementation of protocols, including those related to sedation, analgesia, and delirium practises, may have been impacted by the coronavirus 2019 disease (COVID-19) pandemic, drug shortages, and disruption of ICU organization (such as lower staffing levels).[1] The primary objective of this study was to assess sedation, analgesia, delirium investigation and treatment, mobilisation, and sleep improvement practises among physicians working in adult intensive care units around the world before and during the COVID-19 epidemic. The secondary goals were to see if there were any differences in practises in the study population depending on the time period (before and during the pandemic), continent, and intensive care specialist.

Most sedation, analgesia and delirium practices were comparable before and during the COVID-19 pandemic.

The study was conducted in two steps. The first step involved survey development, administration, and data analysis prior to the COVID-19 pandemic, and the second step, which was designed some posteriori, involved administering the survey to physicians working in COVID-19 ICUs during the epidemic. After researching the literature and engaging in focus groups, a group of critical care specialists reviewed all prospective items for inclusion in the questionnaire. Resulting in a 54-question self-administered electronic questionnaire about ICU profiles, professional expertise, and practises in sedation-, analgesia-, delirium screening-, and treatment-related, early mobilisation, and sleep improvement practises. In the second step of the study, during the COVID- 19 pandemic, the same set of questionnaires was administered to clinicians who worked in COVID-19 ICUs.

The review investigated at 1768 questionnaires, with 1539 (87%) of them being completed. We received 1476 surveys before COVID-19 pandemic, and 292 were submitted after. The Visual Analog Scale (VAS) 61.5 %, the Behavioral Pain Scale (BPS) 48.2 %, the Richmond Agitation Sedation Scale (RASS) 76.6 %, and the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) 66.6 % were the most commonly used tools for evaluating

pain, sedation level, and delirium, respectively, before the pandemicMidazolam and fentanyl were the most commonly used drugs for inducing sedation and analgesia, with 84.8 % and 78.3 %, respectively, while haloperidol and atypical antipsychotics were the most commonly prescribed drugs for delirium treatment, with 68.8 % and 69.4 %, respectively. Some physicians regularly prescribed drugs to induce sleep 19.1 % or ordered mechanical restraints as part of their routine 6.2 % for patients on mechanical ventilation; and non-pharmacological strategies were frequently used for pain, delirium, and sleep deprivation management. Intensive care specialty was independently associated with superior practises during the COVID-19 outbreak. Furthermore, the rate of mechanical breathing was higher, patients were sedated more frequently (94 percent versus 86.1 percent), and sedation strategies were discussed more frequently in daily ward rounds. Morphine was the most commonly used analgesic (77.2%), although sedatives such midazolam, propofol, ketamine, and quetiapine were also used more frequently.

This is a global study aimed towards clinicians to learn about current sedation, analgesia, delirium management, mobilisation, and sleep disruption practises. Midazolam, fentanyl, and haloperidol, or atypical antipsychotics, are still the most commonly used sedatives, pain relievers, and delirium medications. This study emphasises how the COVID-19 epidemic has influenced some of these practises. The majority of clinicians reported using validated measures to evaluate sedation, which is in accordance with clinical guidelines.[2] During the COVID-19 pandemic, sedative prescriptions for patients on MV increased, presumably because to the high occurrence of ARDS. A cohort research indicated a high sedation rate during MV, with midazolam and propofol being the most commonly utilised sedatives, similar to this survey. In addition to RASS for sedation, most sites in this cohort used CAM-ICU for delirium assessments.[3] The use of a broader variety of sedative and analgesic medicines in the second phase of this survey could be explained by shortage of medication, the longer duration length of MV, and the presence of non-ICU trained staff to manage COVID-19 patients during the pandemic.[4]

Before and during the COVID-19 pandemic, most sedation, analgesia, and delirium techniques were similar. Intensive care was a variable that was independently connected with the best practises during the epidemic. Although many of the findings are in connection with evidence-based guidelines, some practises, such as pain assessment in patients who are unable to communicate, non-structured evaluation for delirium assessment, infrequent presence of a pharmacist during daily ICU rounds, inappropriate use of sedative drugs to promote sleep, and the use of opioids beyond the context of pain management, still need to be improved. To achieve these improvements, best practises and educational approaches must be promoted.

References:

1. Luz M, Brandão Barreto B, de Castro REV, Salluh J, Dal-Pizzol F, Araujo C et al. Practices in sedation, analgesia, mobilization, delirium, and sleep deprivation in adult intensive care units (SAMDS-ICU): an international survey before and during the COVID-19 pandemic. Ann Intensive Care. 2022 Feb 4;12(1):9.
2. Devlin JW, Skrobik Y, Gélinas C, Needham DM, Slooter AJC, Pandharipande PP et al. Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU. Crit Care Med. 2018 Sep;46(9):e825-e873.

3. Pun BT, Badenes R, Heras La Calle G, Orun OM, Chen W, Raman R, Simpson BK et al. COVID-19 Intensive Care International Study Group. Prevalence and risk factors for delirium in critically ill patients with COVID-19 (COVID-D): a multicentre cohort study. Lancet Respir Med. 2021 Mar;9(3):239-250.
4. Ammar MA, Sacha GL, Welch SC, Bass SN, Kane-Gill SL, Duggal A, Ammar AA. Sedation, Analgesia, and Paralysis in COVID-19 Patients in the Setting of Drug Shortages. J Intensive Care Med. 2021 Feb;36(2):157-174.

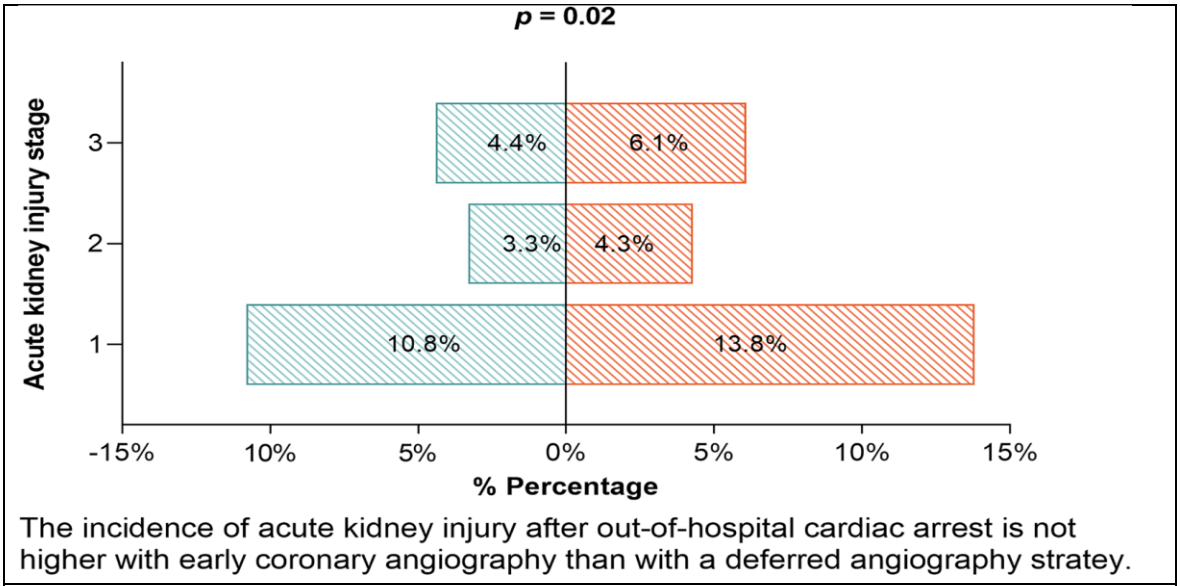
2.Influence of Early and deferred coronary angiography on risk of acute kidney injury in out-of-hospital cardiac arrest patients

The significant morbidity and mortality in patients who return of spontaneous circulation (ROSC) following an out-of-hospital cardiac arrest (OHCA) are mostly due to neurologic injury, systemic ischemia–reperfusion injury, and multi-organ dysfunction. Despite improvements in post resuscitation treatment for OHCA patients over time, the prognosis for these patients remains poor.[1] AKI is commonly seen following cardiac arrest and is associated with the development of chronic renal disease and a poor prognosis. [2]Age, comorbidities, prior renal insufficiency, and time to ROSC are all factors that influence AKI. Diabetes and hypertension are two other risk factors. AKI has also been linked to congestive heart failure, hypotension after cardiac arrest, female sex, and the use of an intra-aortic balloon pump. The use of iodinated contrast during imaging methods such as coronary angiography is another factor that may influence the development of AKI following cardiac arrest.[3] It's uncertain whether the risk of AKI increases after receiving post-cardiac arrest contrast during coronary angiography, and whether this varies depending on the angiography's timing. The objective of this study was to see if early angiography is linked to an increased risk of AKI in out-of-hospital cardiac arrest (OHCA) survivors as compared to deferred angiography.

Performing early Coronary Angiography is safe considering the risk of developing Acute Kidney injury I after out-of-hospital cardiac arrest.

This was a retrospective multicenter cohort study. the researchers evaluated whether early angiography (within 2 hours) after OHCA was non-inferior to deferred angiography in terms of the development of AKI in this study. As the non-inferiority margin, researchers used a 5% absolute difference. The risk difference was calculated with its 90 percent confidence interval (CI) using a generalised linear model for a binary outcome for primary non-inferiority analysis. Patient records were analysed for demographics, pre-hospital settings, admission status, medical history and clinical and laboratory data. Also collected were available renal function tests at one month and one year. The primary outcome measure in this study was the rate of AKI in individuals who received early angiography compared to those who received delayed or no angiography. Researchers replicated the primary analysis using propensity score matching as a sensitivity study. To find predictors of acute kidney damage, a multivariablmodel was developed.

From 2009 to 2018, a total of 2375 individuals were included in the study, with 1148 receiving early coronary angiography and 1227 receiving delayed or no angiography. After OHCA, 18.5 % in the early angiography group experienced AKI, compared to 24.1 % in the deferred angiography group. The risk difference was -3.7 %, with 90 % confidence interval of -6.7 to --0.7 %, demonstrating that early angiography is inferior. The results of the sensitivity analysis utilising propensity score matching were comparable; however early angiography was no longer non-inferior. The factors time to return to spontaneous circulation (OR 1.12, 95% CI 1.06–1.19, p 0.001), the use (or not) of an angiotensin-converting enzyme inhibitor or angiotensin II receptor blocker (OR 0.20, 95% CI 0.04–0.91, p = 0.04), and baseline creatinine (OR 1.05, 95 % CI 1.03–1.07, p 0.001) were found to be independently associated with the development of AKI.



Incidence of acute kidney injury. On the left side in the graph the early angiography group is displayed in blue, on the right side the non-early angiography group is displayed in red

Early angiography did not show a greater incidence or grade of AKI in OHCA patients. These findings indicate that, in terms of the development of AKI, coronary angiography can be performed safely either early or late in patients after OHCA. The lack of a connection between early angiography and AKI in OHCA patients could be explained in part by the post-cardiac arrest syndrome's regulation of ischemia–reperfusion events, which is clearly more advantageous than the possible risk of contrast in these patients. AKI was predicted by a higher baseline creatinine level, the use of an ACEI or ARB, and a longer latency to ROSC. The latter may represent the severity of ischemia–reperfusion injury during OHCA, which has been linked to AKI in multiple investigations.[4]Researchers discovered that early angiography was not associated with a higher risk of AKI, but that deferred angiography was associated with a higher risk of AKI. Remarkably, those who did not have angiography developed higher AKI than those who did. This can be explained by the fact that angiography is more frequently delayed in patients with a worse overall condition. This group was older and had more comorbidities than the previous group. However, mortality was not higher in the delayed

angiography group than in the early angiography group. Researchers discovered a link between the development of severe AKI after OHCA and an increased risk of death, which is consistent with earlier studies.[4]

Despite the fact that AKI occurred in nearly 20% of OHCA patients, researchers discovered that early angiography was not associated with a greater AKI rate than deferred angiography. Both before and after propensity score matching, AKI incidence was considerably greater in the deferred angiography group. The current findings suggest that performing early coronary angiography is safe considering the risk of developing AKI after OHCA.

1. Janssens GN, Daemen J, Lemkes JS, Spoormans EM, Janssen D, den Uil CA et al. The influence of timing of coronary angiography on acute kidney injury in out-of-hospital cardiac arrest patients: a retrospective cohort study. Ann Intensive Care. 2022 Feb 11;12(1):12.
2. amme M, Ait Hamou Z, Ben Hadj Salem O, Guillemet L, Bougouin W, Pène F, Cariou A, Geri G. Long term renal recovery in survivors after OHCA. Resuscitation. 2019 Aug;141:144-150.
3. Azzalini L, Candilio L, McCullough PA, Colombo A. Current Risk of Contrast-Induced Acute Kidney Injury After Coronary Angiography and Intervention: A Reappraisal of the Literature. Can J Cardiol. 2017 Oct;33(10):1225-1228.
4. Rundgren M, Ullén S, Morgan MPG, Glover G, Cranshaw J, Al-Subaie N et al. Renal function after out-of-hospital cardiac arrest; the influence of temperature management and coronary angiography, a post hoc study of the target temperature management trial. Crit Care. 2019 May 8;23(1):163.

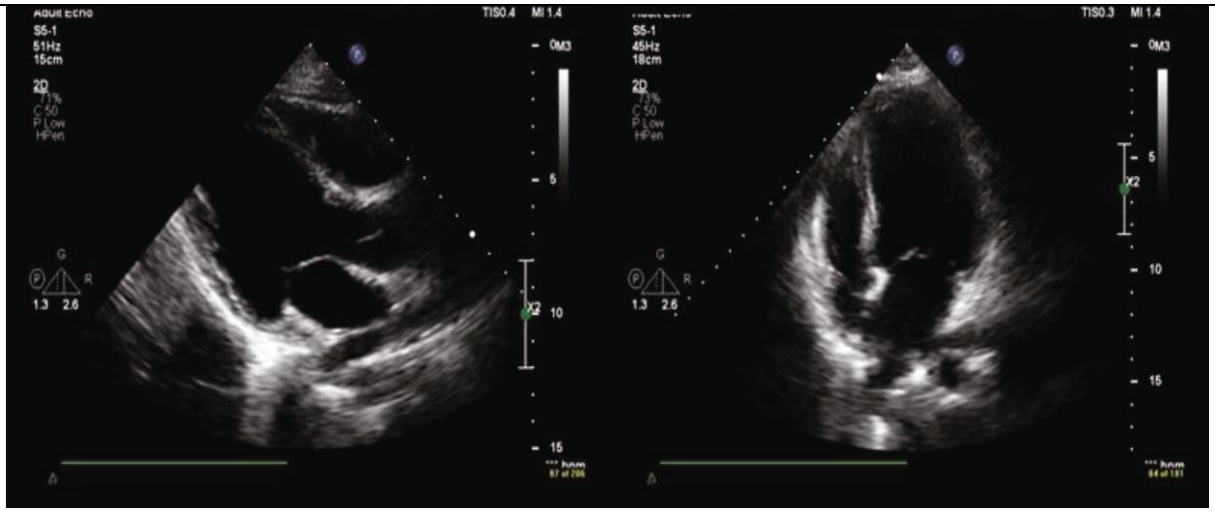
3.A case report of Lazarus Phenomenon

Patients who achieved return of spontaneous circulation (ROSC) after cardiopulmonary resuscitation have been known to possess the "Lazarus Phenomenon," also known as autoresuscitation (CPR). [1]The Lazarus phenomenon has been documented in less than 100 cases worldwide. [2] Previous case reports have described varying intervals between clinical death and ROSC, but this case had the longest duration of CPR and the longest time between pronouncement of death and the point of perception of life validating ROSC among those who survived. The objective of this study is to increase healthcare workers' awareness of delayed ROSC and the significance of monitoring after cessation of CPR.

once resuscitation is stopped, patients should be extensively monitored with cardiac monitoring and electrocardiography before being declared dead.

Recurrent intractable vomiting affected a 25-year-old female. Her symptoms started six months prior to admission, one month after undergoing bariatric surgery in a private clinic. Her procedure went smoothly, and there were no immediate complications. patient had vomiting once or twice a day, which was associated with epigastric pain that exacerbated after meals.Patient vomited minimal amounts of bilious vomit. Patient also experienced limb weakness, weariness, decreased mobility, and pins-and-needles feelings. Except for bilateral lower limb edoema, Patient was found to be vitally and hemodynamically stable. In the emergency department, a computed tomography (CT) scan of the abdomen and pelvis was performed, which ruled out intestinal blockage and thrombosis. Patient was admitted to the hospital and placed under the care of internal medicine because of the above findings. The ultrasound of the abdomen and liver was found to be normal, with the exception of

steatohepatitis symptoms. The gastrointestinal team examined her and reported that Patient had nonalcoholic steatohepatitis, most likely as a result of fast weight loss in the previous six months. An esophagogastroduodenoscopy was also recommended, which revealed a postanastomotic ulcer and gastritis. Her treatment included intravenous proton pump inhibitors, electrolyte replacement, and enoxaparin (40 mg SC daily) for venous thromboembolism prevention. Despite all the efforts, the patient continued to vomit, and was put on total parenteral nutrition and was closely monitored. With her condition deteriorating, a bariatric surgery team was approached about the possibility of reversing her gastric bypass, but they suggested close monitoring and conservative management. On day 14 of her hospital stay, . Nurses noticed bradycardia at 2:00 a.m., with a heart rate of 48–51 bpm. The patient was drowsy at 02:10 a.m., with a pulse rate of 43 beats per minute and a respiration rate of 16 breaths per minute, therefore the on-call team was called. The team arrived at 02:12 a.m. to assess the patient, but the patient's Glasgow Coma Scale (GCS) score dropped to 3 at 02:15 and a code blue was announced. The patient was intubated right away, and continuous CPR was performed for 73 minutes, but no responses were observed, leading to a death announcement. While waiting for the death certificate, the family was locked in a room with no monitors. The patient's family detected movement in the patient's eyes around 04:18 a.m. At 04:19 a.m., an intensive care unit (ICU) doctor examined the patient, and another code blue was issued. On ultrasound, there were faint pulses in the carotid area, as well as contractions of the heart and carotid arteries. At 04:25 a.m., the patient was declared stable, and at 04:45 a.m., ROSC was reported. The patient was transferred to the ICU afterward. The patient had hypotension in the ICU 10 hours later, and an ultra sound indicated an intra abdominal bleeding. Patient spent 41 days in the ICU before being transferred to the Medical High Dependency Unit (MHDU) under the supervision of internal medicine when no bleeding source was detected. Due to jaundice, disorientation, agitation, abdominal distension, and a GCS score of 8, Patient was readmitted to the ICU 13 days after release. Acute ischemic hepatic damage was diagnosed, and Patient was referred to a liver transplant centre.



Echocardiogram postcardiac arrest and resurrection. Apical view and long axis parasternal view.

A rare phenomenon known as autoresuscitation or the Lazarus phenomenon was described in this case report of a 25-year-old Patient who experienced ROSC 50 minutes after death was declared. Even though such occurrences are uncommon, they are frequently underreported. the lack of monitoring during the 50-minute time between the end of CPR and the observation of signs of life There was no significant relationship between the result, CPR duration, and the time interval between ROSC and diagnosis. Gordon et al reported 65 patients with ROSC after resuscitation was stopped, 18 of them (28%) recovered completely. [2]After a ten-week stay in the hospital, the patient was discharged, although not fully recovered in terms of neurologic, cognitive, or motor functions. Only a few case studies have shown patients who have made a complete recovery with no neurologic complications. Due to a "Do Not Resuscitate" order, a female patient recovered after 4 minutes of asystole following total cardiac block and failed temporary transcutaneous pacing. The patient was put on palliative sedation, but the Patient recovered awareness and spontaneous junctional rhythm, as well as complete neurological recovery.[3]

Even among health professionals, the Lazarus phenomenon is underreported and underappreciated. These findings show that resuscitation attempts, like CPR, should not be stopped until a treatable cause is present. Moreover, once resuscitation is stopped, patients should be extensively monitored with cardiac monitoring and electrocardiography before being declared dead. Furthermore, future ACLS standards should include information about the Lazarus phenomena.

References:

1. Reynolds JC, Nicholson T, O'Neil B, Drennan IR, Issa M, Welsford M; Advanced Life Support Task Force at the International Liaison Committee on Resuscitation ILCOR. Diagnostic test accuracy of point-of-care ultrasound during cardiopulmonary resuscitation to indicate the etiology of cardiac arrest: A systematic review. Resuscitation. 2022 Mar;172:54-63.
2. Gordon L, Pasquier M, Brugger H, Paal P. Autoresuscitation (Lazarus phenomenon) after termination of cardiopulmonary resuscitation - a scoping review. Scand J Trauma Resusc Emerg Med. 2020 Feb 26;28(1):14.
3. Sprenkeler DJ, van Hout GPJ, Chamuleau SAJ. Lazarus in asystole: a case report of autoresuscitation after prolonged cardiac arrest. Eur Heart J Case Rep. 2019 Sep 1;3(3):ytz134.